GOMPHRENOIDEAE (AMARANTHACEAE) OF THE BAHAMA ISLANDS

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THIS PAPER IS PRESENTED to clarify the identity and nomenclature of members of the Gomphrenoideae represented in the Bahama Islands, including the Turks and Caicos Islands. The Gomphrenoideae have been the special study of the first author for several years; the Bahama flora is under revision by the second author and George R. Proctor.

In the Amaranthaceae, members of the subfamily Gomphrenoideae are characterized by anthers with two chambers, i.e., with a single longitudinal line of dehiscence. The other genera of the Amaranthaceae (*Amaranthus*, *Achyranthes*, *Celosia*) in the flora of the Bahamas have four-chambered anthers with two longitudinal lines of dehiscence, and are members of subfamily Amaranthoideae.

Four genera of the Gomphrenoideae have been collected in the Bahamas: *Alternanthera*, *Iresine*, *Lithophila*, and *Philoxerus*. *Alternanthera* Forssk. was called *Achyranthes* L., while *Achyranthes* L. was called *Centrostachys* L. by Britton and Millspaugh (1920), following Standley (1915). In 1920 eight species of Gomphrenoideae were reported. We report nine species, with only three names in common with the earlier flora. Two other names are considered synonyms, and one additional species is reported. Five other widespread species of the Gomphrenoideae may possibly be found in the flora, but have not been collected so far as we know. Specimens identified by various botanists as *Achyranthes aspera* L., *Celosia nitida* Vahl, and six species of *Amaranthus* have been seen from the Bahamas, but are not treated in this paper in which only members of the Gomphrenoideae are considered.

KEY TO THE GENERA OF GOMPHRENOIDEAE IN THE BAHAMAS

(Names indicated in parentheses represent taxa not yet found in the Bahama Islands, which are weedy or frequent escapes from cultivation, and may yet appear within the archipelago.)

A. Inflorescences diffuse, most flowers unisexual. ..... *Iresine*.

A. Inflorescences globose, flowers hermaphroditic.

B. Stigma capitate to bilobed. ..... *Alternanthera*.

B. Stigma bifid or trifurcate and attenuate.

C. Filaments with fimbriate lateral processes atop the tube. ..... (*Gomphrena*).

C. Filaments ligulate, with a shallow cup.

D. Fertile anthers 5, staminodes absent; leaves spread along stem. ..... *Philoxerus*.

D. Fertile anthers 2, staminodes 3, longer leaves in basal rosettes. ..... *Lithophila*.

Alternanthera Forsskål, Fl. Aegypt.-Arab. 28. 1775.

Mogiphanes Martius, Nov. Gen. Sp. **2**: 29. *t. 129*. 1826.
Telanthera R. Brown in Tuckey, Narr. Congo 447. 1818.
Achyranthes sensu Standley, Jour. Wash. Acad. Sci. **5**: 74. 1915, non L.

Key to the Species of Alternanthera in the Bahamas

A. Inflorescences terminal, pedunculate. ..... 5. *A. brasiliana*.
A. Inflorescences axillary, sessile.
  B. Pseudostaminodia mostly ligulate.
    C. Calyx lobes acute but not spinescent, subglabrous with simple trichomes.
      D. Mature fruit strongly bilaterally symmetrical, inflated, expanding beyond the calyx. ..... (*A. sessilis*).
      D. Mature fruit slightly bilaterally symmetrical, not inflated, included within calyx. ..... 2. *A. paronychioides*.
    C. Calyx lobes spinescent, pubescent with glochidiate barbed trichomes.
      E. Largest leaves about 2 cm. long by 2 cm. wide; calyx lobes usually more than 4 mm. long, strongly spinescent. ..... (*A. pungens*).
      E. Largest leaves about 1.5 cm. long by 1 cm. wide; calyx lobes usually less than 4 mm. long, spinescent. ... 1. *A. caracasana*.
  B. Pseudostaminodia fimbriate.
    F. Calyx glabrous, leaves ± sessile. ..... 3. *A. maritima*.
    F. Calyx pubescent, leaf petioles conspicuous.
      G. Leaves obtuse, with very dense stellate pubescence. ..... 4. *A. canescens*.
      G. Leaves acute, with very little pubescence, trichomes simple. ..... (*A. tenella*).

1. **Alternanthera caracasana** HBK. Nov. Gen. Sp. **2**: 205 [folio ed.]. 1818.

Alternanthera villiflora Scheele, Linnaea **22**: 149. 1849.
Alternanthera achyrantha parvifolia Moquin in DC. Prodr. **13**(2): 359. 1849.
Alternanthera peploides (Willd. ex Roemer & Schultes) Urban, Repert. Sp. Nov. **15**: 168. 1918.
Alternanthera macrorhiza Hauman, Bull. Jard. Bot. Brux. **18**: 114. 1946.

This species was called *Achyranthes repens* L. by Britton and Millspaugh (1920), but *Achyranthes repens* L. is a synonym of *Alternanthera pungens* HBK. [= *Alternanthera repens* (L.) Smith, 1818, non *Alternanthera repens* J. F. Gmelin, 1791]. It is known as "washerwoman" in the Bahamas.

2. **Alternanthera paronychioides** St. Hil. Voy. Brés. 2(2): 43. 1833.

Gomphrena Ficoidea L. Sp. Pl. ed. 1. **1**: 225. 1753.
Alternanthera ficoidea (L.) Smith in Rees, Cyclop. Vol. 39 [Addend. & Corrig., alph. ord.]. 1818 [1819]. [non *Alternanthera ficoides* Palisot de Beauvois, 1818 = *Alternanthera sessilis* (L.) DC.]
Alternanthera pilosa Moquin in DC. Prodr. **13**(2): 357. 1849.
Alternanthera chacoensis Morong, Ann. New York Acad. Sci. **7**: 208. 1893.
Alternanthera felipponei Beauverd, Bull. Soc. Bot. Genève. Ser. 2. **1921**: 268. 1922.

This species was called *Achyranthes polygonoides* (L.) Lamarck by Britton and Millspaugh (1920), but the basionym, *Gomphrena polygonoides* L., 1753, is a *nomen dubium* (Pedersen, 1967) and must be avoided. It is a surprise to us that *Gomphrena ficoidea* L., 1753, belongs here, for it had been identified with the taxon originally described as *Bucholzia polygonoides* γ *diffusa* Martius, 1826, until J. F. Veldkamp (pers. comm.) examined van Royen's specimen in Leiden. The choice of names for this species is replete with subjective decisions (Pedersen, 1967) and will be discussed by the senior author in another paper.

3. **Alternanthera maritima** (Martius) St. Hil. Voy. Brés. 2(2): 43. 1833.

Britton and Millspaugh called this species *Achyranthes maritima* (Martius) Standley. It is found chiefly on beaches of islands on the Great Bahama Bank, but also occurs in maritime tropical Brazil and West Africa.

4. **Alternanthera canescens** HBK. Nov. Gen. Sp. 2: 204, 205 [folio ed.]. 1818, non (HBK.) Moquin, 1849 = *Iresine canescens* H. & B. ex Willd. 1806.

Alternanthera forsstroemii Fries, Ark. Bot. **16**(12): 12. 1921.
Alternanthera crassifolia (Standley) Alain, Contr. Ocas. Mus. Hist. Nat. Col. "De la Salle" **9**: 1. 1950.
Achyranthes crassifolia Standley, Proc. Biol. Soc. Wash. **32**: 241. 1919.

During a research visit to the island of Grand Turk in 1974, Gillis and Proctor collected an unknown *Alternanthera* in *Acacia* thorn-scrub between the townsite and the airport. Mears has determined this collection as *A. canescens* HBK.

Gillis & Proctor 12186 is the first collection of this species in the Bahama Archipelago, and is the first collection from north of the Venezuelan coastal islands of sufficient material for analysis. The two collections from Guadeloupe and Cuba, types of the Fries and Standley names, have been too incomplete for certain identification. The Gillis and Proctor material demonstrates that *Alternanthera canescens* HBK. does occur on West Indies islands, and indicates that the Fries and Standley species were insufficiently distinct to warrant their separation as species. The Gillis and Proctor specimens are deposited at A and IJ.

5. **Alternanthera brasiliana** (L.) Kuntze, Rev. Gen. Pl. 2: 537. 1891.

Gomphrena brasiliana L. Centuria II: 135. 1756.
Philoxerus brasiliana (L.) Smith in Rees, Cyclop. Vol. 27. [alph. ord.]. 1814.
Alternanthera jacquinii (Schrader) Grisebach ex Kuntze, *op. cit.* 538. 1891, *pro syn.*
Alternanthera straminea (Martius) Millspaugh, Field Mus. Bull. **1**: 39. 1932, non Stuchlik, 1913, *sphalm.*

The limit of the type variety is complex and will be elaborated upon by the first author in a separate paper. The type variety of this species is found throughout the Caribbean and in northern South America, extending into Brazil. This species was collected for the first time in the Bahamas on Long Island by Steven R. Hill (Hill, 1974). The second author has also gathered it from a ruderal site on New Providence Island.

There are three other taxa of *Alternanthera* which are found nearly throughout the Caribbean, but which have not yet been collected in the Bahamas: *Alternanthera sessilis* (L.) DC., *A. pungens* HBK. [= *A. repens* (L.) Smith, *A. achyrantha* (L.) R. Br. ex Roemer & Schultes], and *A. tenella* Colla.

Gomphrena L. Sp. Pl. ed. 1. 1: 224. 1753; Gen. Pl. 105. 1754.

It is possible that *Gomphrena globosa* L., 1753, and *G. serrata* L., 1753 (= *G. decumbens* Jacquin, 1805, *G. dispersa* Standley, 1916) occur in the Bahamas from time to time as escapes from cultivation, inasmuch as they do so elsewhere in the West Indies. No specimens have yet been found, however. *Gomphrena globosa* has capitula greater than 1.5 cm. in diameter, usually brightly colored, with large, ovate-acute leaves. *G. serrata* has capitula less than 1.2 cm. in diameter, usually white to pink, with leaves lanceolate-acute to obtuse.

Iresine P. Browne, Hist. Jamaica 358. 1756.

Rosea Martius, Nov. Gen. Sp. **2**: 58. 1826.
Trommsdorffia Martius, *ibid.* 40. *t. 136.*
Ireneis Moquin in DC. Prodr. **13**(2): 349. 1849.

KEY TO THE SPECIES OF IRESINE IN THE BAHAMAS

Leaves ovate-lanceolate, acute; inflorescence diffusely paniculate. . *I. canescens.*
Leaves elliptic-linear, rounded; inflorescence narrow. ..... *I. flavescens.*

1. **Iresine canescens** Humboldt & Bonpland ex Willdenow, Sp. Pl. ed. 4. **4**: 765. 1806.

Celosia paniculata L. Sp. Pl. ed. 1. **1**: 206. 1753.
Iresine paniculata (L.) Kuntze, Rev. Gen. Pl. **2**: 542. 1891, non Poir. 1814.
Iresine Celosia L. Fl. Jam. 1758 and Syst. ed. 10. 1291. 1759, *nomen illegit.*
Iresine celosioides L. Sp. Pl. ed. 2. **2**: 1456. 1763, *nomen illegit.*
Iresine elongata Humboldt & Bonpland ex Willd. *op. cit.* 765. 1806.

Alternanthera dubia HBK. Nov. Gen. Sp. **2:** 209 [folio ed.]. 1818.
Iresine parvifolia HBK. *ibid.* 198.
Iresine havanensis HBK. *ibid.* 199.
Iresine polymorpha Martius, Nov. Gen. Sp. **2:** 56. *t. 153.* 1826.
Trommsdorffia canescens (H. & B. ex Willd.) Martius, *ibid.* 42.
Iresine floribunda Martens & Galeotti, Bull. Acad. Brux. **10:** 347. 1843.
Iresine gracilis Martens & Galeotti, *ibid.* 347.
Iresine frutescens Moquin in DC. Prodr. **13**(2): 344. 1849.

This is the type species of *Iresine* and one of the most widely distributed species of Amaranthaceae. *Celosia paniculata* L., 1753, is well typified and is clearly this species but cannot be transferred to *Iresine* because the name *Iresine paniculata* Poir., 1814, is a synonym of *Iresine angustifolia* Euphrasén, 1798. When Linnaeus named *Iresine Celosia* L., 1758, and *Iresine celosioides* L., 1762, placing them in his class DIOECIA PENTANDRIA, he cited *Celosia paniculata* L., 1753, and refrained from listing *Celosia paniculata* separately. He simply transferred *Celosia paniculata* to P. Browne's *Iresine* when he discovered it was dioecious. The earliest valid name in *Iresine* is *I. canescens*.

2. **Iresine flavescens** Humboldt & Bonpland ex Willdenow, Sp. Pl. ed. 4. **4:** 766. 1806.

Alternanthera flavescens (Humboldt & Bonpland ex Willd.) Moquin in DC. Prodr. **13**(2): 350. 1849, non HBK., 1818.
Iresine inaguensis Millspaugh, Publ. Field Mus. Bot. **2:** 149. 1906.
Iresine keyensis Millspaugh, *ibid.* 148.

This species is endemic to the West Indies and was included in the previous flora under this name. *Iresine inaguensis* might be distinguished as a form with linear, nearly sessile leaves, found from Castle Island and Samana Cay southward in the archipelago (see FIGURE 1).

Lithophila Swartz, Prodr. 14. 1788.

1. **Lithophila muscoides** Swartz, *ibid.*

Alternanthera caribaea Moquin in DC. Prodr. **13**(2): 354. 1849.
Alternanthera muscoides (Sw.) Hook. f. in Benth. & Hook. f., Genera Pl. **3:** 39. 1883.
Iresine muscoides (Sw.) Kuntze, Rev. Gen. Pl. **1:** 542. 1891.

This species, commonly found on coastal muds and on the shores of brackish ponds throughout the archipelago, becomes more common in the drier islands to the south.

Philoxerus R. Brown, Prodr. 416. 1810.

1. **Philoxerus vermicularis** (L.) Smith ("-atus") in Rees, Cyclop. vol. 27. [alph. ord.]. 1814.

Gomphrena vermicularis L. Sp. Pl. **1:** 224. 1753.

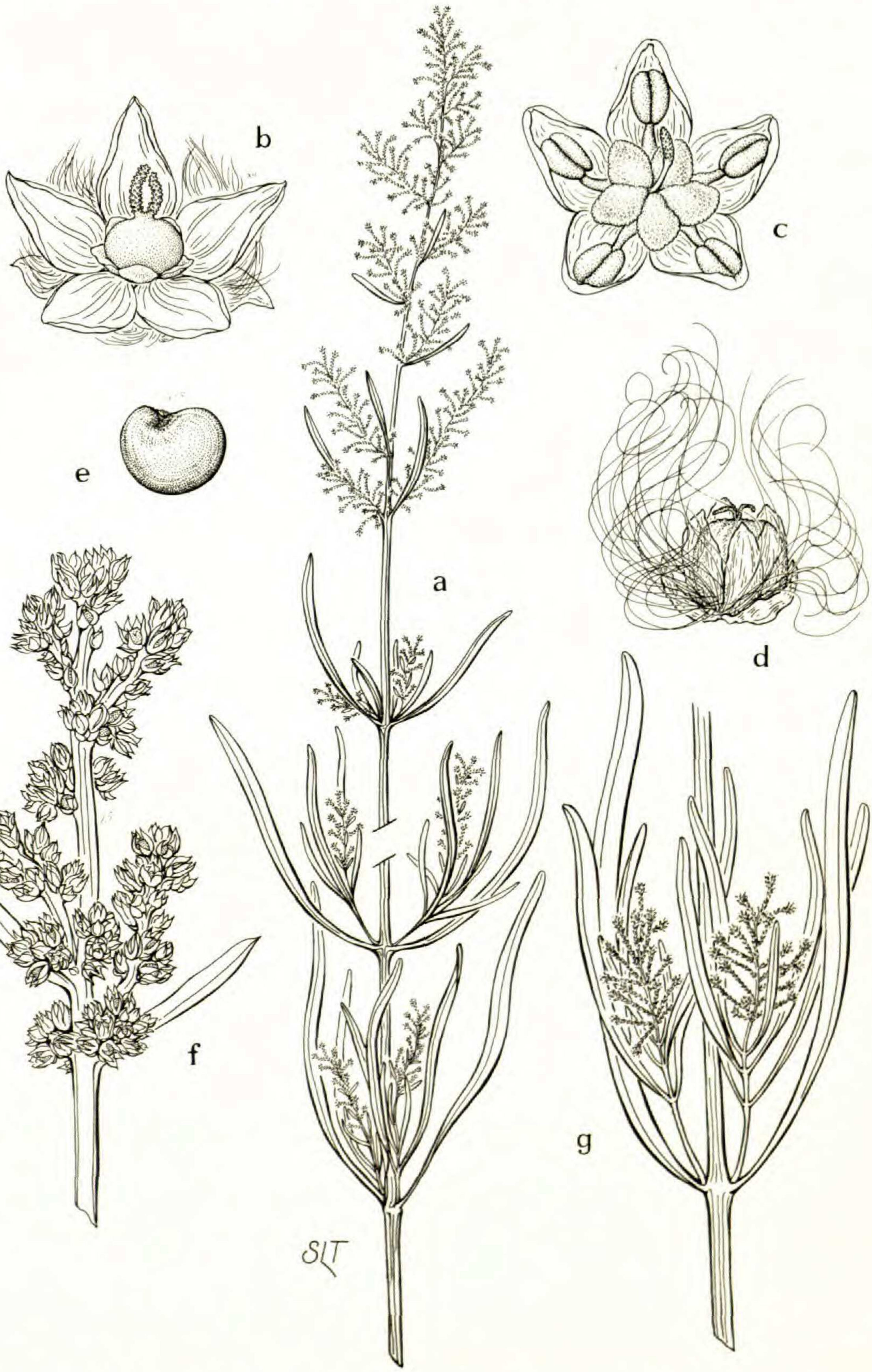

FIGURE 1. *Iresine flavescens* of the *inaguensis* form: a, habit, × ¼; b, carpellate flower, × 9; c, staminate flower, × 13; d, fruit, × 6; e, seed, × 9; f, infructescence, × 2; g, node showing branches, × 1. Based on *Gillis & Proctor 11575* from Mayaguana Island.

Iresine vermicularis (L.) Moquin in DC. Prodr. **13**(2): 340. 1849.
Lithophila vermicularis (L.) Uline ("-atus"). Field Mus. Publ. Bot. Ser. **2**: 39. 1900.

Philoxerus vermicularis is found throughout the Caribbean. In the Bahamas it is called "sampire" or "salt-weed."

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